

**THIS FILE CONTAINS REPRESENTATIVE PAGES  
FROM THE CLASSIFICATION ORDER REPORT**

U. S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

CLASSIFICATION ORDER 1728

MARCH 2, 1999

Project No. E-4935

The following classification changes will be effected by this order:

	<u>Class</u>	<u>Subclasses</u>	<u>Art Unit</u>	<u>Ex'r Search Room No.</u>
Abolished:	361	91 and 93	2836	CP4-10C17
Established:	361	91.1-91.8, 93.1-93.9	2836	CP4-10C17

The following classes are also impacted by this order:

Classes: 257, 307 323, 324, 327, 335, 337, 338, 340, 363, 364, 374, 439

This order includes the following:

- A. CLASSIFICATION MANUAL CHANGES;
- B. LISTING OF PRINCIPAL SOURCE OF ESTABLISHED AND DISPOSITION OF ABOLISHED SUBCLASSES;
- C. CHANGES TO THE U. S. - I. P. C. CONCORDANCE;
- D. DEFINITION CHANGES AND NEW OR ADDITIONAL DEFINITIONS.

CLASSIFICATION ORDER 1728

MARCH 2, 1999

PROJECT NO. E-4935

Project Leader: Emily Chan  
Examiners: Ronald W. Leja, Sally C. Medley  
Reviewer: Edith Jackmon-Hunter  
Editor: David Delzingaro

A. CLASSIFICATION MANUAL CHANGES

Additional and modified subclasses

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1	SAFETY AND PROTECTION OF SYSTEMS AND DEVICES	46	...With more than two wires
2	.Arc suppression at switching point (i.e., includes solid-state switch)	47	..In a polyphase system
3	..Synchronized or sequential opening or closing	48	...With more than three wires
4	...Counter electromotive force	49	..In a single phase system
5	...With current sensitive control circuit	50	...With more than two wires
6	...With voltage sensitive control circuit	51	.Overspeed responsive
7	...With combined voltage and current sensitive control circuit	52	.By regulating source or load (e.g., generator field killed)
8	...Shunt bypass	53	..Prime mover control
9	....With sequentially inserted impedance	54	.Load shunting by fault responsive means (e.g., crowbar circuit)
10	..By inserting series impedance	55	..Disconnect after shunting
11	..Nonlinear impedance	56	..Voltage responsive
12	...By arc stretching (e.g., horn gap)	57	..Current responsive
13	..Shunt bypass of main switch	58	.Impedance insertion
14	..Arc blowout for main breaker contact (e.g., electromagnet, gas, fluid, etc.)	59	.Circuit automatically reconnected only after the fault is cleared
15	.Capacitor protection	60	..With differential voltage comparison across the circuit interrupting means
16	..Series connected capacitors	61	..Reclosing of the nonfaulty phases of a polyphase system
17	..Shunt connected capacitors	62	.Feeder protection in distribution networks
18	.Voltage regulator protective circuits	63	..With current responsive fault sensor
19	.Superconductor protective circuits	64	...With communication between feeder disconnect points
20	.Generator protective circuits	65	..With current and voltage responsive fault sensors
21	..Voltage responsive	66	...With communication between feeder disconnect points
22	.Compressor protective circuits	67	.Series connected sections with faulty section disconnect
23	.Motor protective condition responsive circuits	68	..With communication between disconnect points
24	..Current and temperature	69	...Pilot wire communication
25	..Motor temperature	70	..Constant current system
26	...With bimetallic sensor	71	.Automatic reclosing
27	...With thermistor sensor	72	..With lockout means
28	..With time delay	73	...Including timer reset before lockout
29	...During energization of motor	74	..Continuous
30	..Current and voltage	75	...With time delay before reclosing
31	..Current	76	.With phase sequence network analyzer
32	...Bimetallic element	77	.Reverse phase responsive
33	..Voltage	78	.With specific quantity comparison means
34	...Bimetallic element	79	..Voltage and current
35	.Transformer protection	80	...Distance relaying
36	..With differential sensing means	81	....With communication means between disconnect points
37	..With temperature or pressure sensing means	82	...Reverse energy responsive (e.g., directional)
38	..Transformer with structurally combined protective device	83	...With time delay protective means
39	...With lightning arrester and fuse	84	..Reverse energy responsive (e.g., directional)
40	...With lightning arrester (e.g., spark gap)	85	..Phase
41	...With fuse	86	..Voltage
42	.Ground fault protection	87	..Current
43	..Fault suppression (e.g., Petersen coil)	88	.With specific voltage responsive fault sensor
44	..With differential sensing in a polyphase system	89	..With time delay protective means
45	..With differential sensing in a single phase system		

# Title Change  
\* Newly Established Subclass

@ Indent Change  
& Position Change

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SAFETY AND PROTECTION OF SYSTEMS AND DEVICES		115	..With specific circuit breaker or control structure
..With specific voltage responsive fault sensor		116	..Pneumatically operated circuit breaker
90	..Overvoltage and undervoltage	117	..High voltage dissipation (e.g., lightning arrester)
* 91.1	..Overvoltage	118	..Surge prevention (e.g., choke coil)
* 91.2	...With resistor sensor	119	...In communication systems
* 91.3	...Including time delay	120	..Vacuum or gas filled space discharge
* 91.4	...Including photo-coupling (e.g., photo-receptors, photo-emitters, etc.)	121	..Fluid (e.g., mercury, quenching)
* 91.5	...Including P-N junction (e.g., a diode, a zener diode, or transistor)	122	...Electrolytic
* 91.6	....With zener diode sensor	123	...Gas blast
* 91.7	...Protection by snubber circuitry	124	..Thermal (e.g., fusible, bimetallic)
* 91.8	...Protection for thyristor	125	...With cutout (e.g., blowout type)
92	..Undervoltage	126	..Current limiting material in discharge path
* 93.1	..With specific current responsive fault sensor	127	...Nonlinear material (e.g., valve type)
* 93.2	..Digital control	128	....With plural gaps in discharge path
* 93.3	..Rating plug	129	..Plural gaps with common electrode
* 93.4	..Automatic reset after trip	130	..Plural gaps serially connected
* 93.5	..Transformer and resistor sensors	131	..Combined (e.g., with disconnect switch)
* 93.6	..Transformer sensor (i.e., toroidal current sensor)	132	...With line supporting insulator
* 93.7	..Resistor sensor	133	..With magnetic means (e.g., electromagnet)
* 93.8	..Thermal sensing	134	...Arc stretching (e.g., blowout)
* 93.9	..Current limiting	135	....By separating contacts
94	..With time delay protective means	136	...For grounding line
95	..With instantaneous override	137	..Horn gap
96	....With multiple timing characteristics (e.g., short, long)	138	...With resistance insertion
97	...With multiple timing characteristics	139	CONTROL CIRCUITS FOR ELECTROMAGNETIC DEVICES
98	...Transistorized	140	..Including compensation for thermal change of electromagnetic device
99	...Combined thermal-electromagnetic relay	141	..Including superconductivity
100	..With semiconductor circuit interrupter (e.g., SCR, Triac, Tunnel Diode, etc.)	142	..Including housing
101	...With transistor circuit interrupter	143	..Systems for magnetizing, demagnetizing, or controlling the magnetic field
102	..With mechanical circuit breaker	144	..For lifting or holding
103	..Circuit interruption by thermal sensing	145	...Magnetic chuck-type
104	..With fuse	146	..Systems for magnetic field stabilization or compensation
105	..With bimetallic element	147	..With permanent magnet
106	..With thermistor	148	...Calibration or permanent magnet
107	..With specific transmission line (e.g., guarded)	149	..Demagnetizing
108	..Plural conductors in single sheath (e.g., compound)	150	...Television degaussing
109	..Too large fault makes breaker inoperative	151	...Magnetic tape
110	..Transient nonresponsive (e.g., ignores surge on transmission line)	152	..Including particular drive circuit
111	..Transient responsive	153	...Pulse initiated
112	..With space discharge means	154	...Including means to establish plural distinct current levels (e.g., high, low)
113	..With tuned circuit	155	....With capacitor charging or discharging through coil
114	..With manual or automatic opening of breaker and manual reclose	156	...With capacitor charging or discharging through coil
		157	..Including instrument (e.g., meter-relay)
		158	..Temperature indicating instrument

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HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE ELECTRICAL COMPONENTS		
..For electronic systems and devices		
..Printed circuit board		
...Plural		
801	....With housing or chassis	514
	.....Specific latching or retaining device	515
802	.....Specific alignment or guide means	516
803	....Interconnection details	517
804	....Spacer details	518
805	..Matrix assembly	519
806	..Diode	520
807	..Component mounting or support means	521
808	..Mounting pad	522
809	..With discrete structure or support	523
810	..Plural mounting or support	524
811	..With passive components	525
812	..With particular insulation	526
813	..Lead frame	527
814	..Radio type	528
815	..Tube mounting	529
816	..Shielding	530
817	..For electronic tube	531
818	..EMI	532
819	..For relay	533
820	..For semiconductor device	534
821	..For capacitor and inductor	535
822	..Contact banks	536
823	..Terminal block	537
824	..With protective device or unit	538
825	..Support brackets	539
826	..Wire distribution (e.g., harness, rack, etc.)	540
827	..With interconnecting cable	541
828	..With switchboard or switch	434
829	..Frame	435
830	..With plurality of capacitors	436
831	..With cooling means	437
832	..With switchboard or switch	
833	..Fuse block	
834	..Plural	
835	..Fuse pullout device	
836	..For transformer	
837	..For switch or fuse	
500	ELECTROLYTIC SYSTEMS OR DEVICES	
501	..Coulometer (i.e., electrochemical timer)	
502	..Double layer electrolytic capacitor	
503	..Liquid electrolytic capacitor	
504	..With significant electrolyte	
505	...Salt solute	
506	...Ethylene glycol	
507	...With depolarizer	
508	..Anode type electrode	
509	...Aluminum or tantalum	
510	...Anode riser	
511	...Wound	
512	....With separator	
513	....With mounting means (e.g., anchoring means or clamping)	
	....With heat conductor (e.g., heat sink)	
	....With common conductor (e.g., stripline)	
	..Cathode type electrode (e.g., cathode casing)	
	..Casing	
	...With hermetic seal	
	...With header, cover, or endseal	
	....Significant electrical connection means (e.g., terminals or leads)	
	...With vent means	
	..Multiple capacitors	
	..Solid electrolytic capacitor (e.g., dry electrolytic capacitor)	
	..Dielectric	
	..With significant electrolyte or semiconductor	
	...Paste or gel	
	...Organic salt (e.g., TCNQ)	
	..Anode type electrode	
	...Aluminum or tantalum	
	...Wound	
	....With lead conductor	
	..Cathode type electrode	
	...With significant lead	
	..With protection means	
	..Casing	
	...With hermetic seal	
	...With header, cover, or endseal	
	....Significant electrical connection means (e.g., terminals or leads)	
	....With potting	
	..With terminal	
	..Multiple capacitors	
	..Systems (e.g., plural cells, standby exciting voltage)	
	..Current interruption type (e.g., circuit breaker, D.C.-to-pulse converters)	
	..Rectifiers	
	MISCELLANEOUS	
	*****	
	FOREIGN ART COLLECTIONS	
	*****	
	Any foreign patents/nonpatent literature from subclasses that were reclassified have been transferred directly to art collections listed below. These art collections contain ONLY foreign documents/nonpatent literature. [Note: The parenthetical references in the titles refer to the abolished U.S. classifications from which these art collections were derived.]	
	SAFETY AND PROTECTION OF SYSTEMS AND DEVICES (361/1)	
	..With specific voltage responsive fault sensor (361/88)	
	* FOR 100 ..Overvoltage (361/91)	

# Title Change  
\* Newly Established Subclass

• Indent Change  
& Position Change

361-8

CLASS 361 ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

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SAFETY AND PROTECTION OF SYSTEMS AND  
DEVICES (361/1)

\* FOR 101 .With specific current responsive fault  
sensor (361/93)

# Title Change  
\* Newly Established Subclass

© Indent Change  
& Position Change

✓

SOURCE CLASSIFICATION(S) OF PATENTS  
IN NEWLY ESTABLISHED SUBCLASSES REPORT  
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<u>New Classification</u>	<u>Number Of ORs</u>	<u>Source Classification</u>	<u>Number Of ORs</u>
361/100	4	361/93	271
361/101	5	361/93	271
361/102	10	361/93	271
361/103	1	361/91	246
361/104	1	361/93	271
361/110	1	361/91	246
361/111	8	361/91	246
361/113	2	361/91	246
361/117	1	361/93	271
361/119	8	361/91	246
361/120	2	361/91	246
361/128	1	361/91	246
361/130	1	361/91	246
361/18	3	361/91	246
361/56	1	361/93	271
	30	361/91	246
361/58	1	361/93	271
	4	361/91	246
361/71	1	361/93	271
361/85	1	361/93	271
361/91.1	30	361/91	246
361/91.2	27	361/91	246
361/91.3	13	361/91	246
361/91.4	7	361/91	246
361/91.5	1	361/93	271
	43	361/91	246
361/91.6	38	361/91	246
361/91.7	9	361/91	246
361/91.8	16	361/91	246
361/92	1	361/91	246
361/93.1	1	361/91	246
	32	361/93	271
361/93.2	37	361/93	271
361/93.3	9	361/93	271

DISPOSITION CLASSIFICATION(S) OF PATENTS  
FROM ABOLISHED SUBCLASSES REPORT  
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✓ Page: 1

<u>Source Classification</u>	<u>Number Of ORs</u>	<u>New Classification</u>	<u>Number Of ORs</u>
361/91	246	361/103	1
		361/110	1
		361/111	8
		361/113	2
		361/119	8
		361/120	2
		361/128	1
		361/130	1
		361/18	3
		361/56	30
		361/58	4
		361/91.1	30
		361/91.2	27
		361/91.3	13
		361/91.4	7
		361/91.5	43
		361/91.6	38
		361/91.7	9
		361/91.8	16
		361/92	1
		361/93.1	1
361/93	271	361/100	4
		361/101	5
		361/102	10
		361/104	1
		361/117	1
		361/56	1
		361/58	1
		361/71	1
		361/85	1
		361/91.5	1
		361/93.1	32
		361/93.2	37
		361/93.3	9
		361/93.4	17
		361/93.5	9
		361/93.6	48
		361/93.7	29
		361/93.8	10
		361/93.9	20

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C. CHANGES TO THE U. S. - I. P. C. CONCORDANCE

<u>Class</u>	<u>U. S.</u> <u>Subclass</u>	<u>I. P. C.</u> <u>Subclass</u>	<u>Notation</u>
361	91.1	H02H	3/20 9/04
	91.2	H02H	3/20 9/04
	91.3	H02H	3/027
	91.4	H02H	3/20 9/04
	91.5	H02H	3/20 9/04
	91.6	H02H	3/20 9/04
	91.7	H02H	3/20 9/04
	91.8	H02H	3/20 9/04
	93.1	H02H	3/08 9/02
	93.2	H02H	3/08 9/02
	93.3	H02H	3/08 9/02
	93.4	H02H	3/06
	93.5	H02H	3/08 9/02
	93.6	H02H	3/08 9/02
	93.7	H02H	3/08 9/02
	93.8	H02H	5/04
	93.9	H02H	9/08

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D. CHANGES TO THE DEFINITIONS (Project No. E-4935)

CLASS 257 - ACTIVE SOLID-STATE DEVICES (E.G., TRANSISTORS, SOLID-STATE DIODES)

Definitions Modified

Subclass 173: Under SEE OR SEARCH CLASS, in the reference to Class 361

Delete:

1+ for safety and protection of systems and devices.

Insert:

91.1+ for overvoltage protection in safety and protection of systems and devices.

Subclass 212: Under SEE OR SEARCH CLASS, in the reference to Class 361, before "subclass 198"

Insert:

subclass 91.3 for overvoltage protection with time delay, and

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D. CHANGES TO THE DEFINITIONS (Project No. E-4935)

CLASS 340 - COMMUNICATIONS: ELECTRICAL

Definitions Modified

Subclass 527: Under SEE OR SEARCH CLASS in the reference to Class 361, after "and Devices"

Insert:

subclass 91.3 for overvoltage protection with time delay and

Subclass 646: Under SEE OR SEARCH CLASS in the reference to Class 361, before "."

Insert:

and subclass 93.6 for abnormal current condition detection using transformer sensor

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D. CHANGES TO THE DEFINITIONS (Project No. E-4935)

CLASS 361 - ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

Definitions Abolished

Subclasses 91 and 93

Reference Updates:

In	Change reference from	To
<u>Subclass</u>	<u>Subclass</u>	<u>Subclass(es)</u>
5, SEE OR SEARCH THIS	93	93.1+
CLASS, SUBCLASS (SSTC,S)		
31, SSTC,S	93	93.1+
57, SSTC,S	93	93.1+
63, SSTC,S	93	93.1+
87, SSTC,S	93	93.1+
94, DEFINITION (Def.)	93	93.1
100, Def.	93	93.1
102, Def.	93	93.1

Definitions Established

**91.1 Overvoltage:**

Subject matter under subclass 88 wherein the fault sensor is responsive to an overvoltage condition.

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- (1) Note. This subclass relates to protection involving overvoltage conditions which are considered to be fault conditions and not otherwise. Fault conditions are defined as those which could result in damage to the load circuit, if ignored, but do not include electrostatic discharge (ESD) event.
- (2) Note. For ESD event protection, see Class 361, subclass 56.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 18, for voltage regulation by sensing overvoltage conditions.
- 33, for sensing abnormal voltage conditions in motor circuits.
- 56, for load shunting by sensing an abnormal voltage condition.
- 111, for protection from transient overvoltage conditions.

## SEE OR SEARCH CLASS:

- 257, Active Solid-State Devices, (e.g., Transistors, Solid-State Diodes), subclass 173 for device protection from overvoltage.
- 335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclass 20 for automatically response to abnormal voltage condition.
- 340, Communications: Electrical, subclass 662 for humanly perceptible means responsive to overvoltage.

**91.2 With resistor sensor:**

Subject matter under subclass 91.1 including a device offering resistance to a flow of electric current and wherein the overvoltage condition is detected across the device.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 5+, switch position dependent upon sensed current across a resistance.
- 31, for sensing abnormal voltage conditions in motor circuits by sensing across resistance.
- 57, for load shunting by sensing an abnormal voltage condition across resistance.
- 63+, for feeder protection with disconnect by sensing an abnormal voltage condition across resistance.
- 78+, for quantity comparisons including sensing overvoltage conditions across resistance.

## SEE OR SEARCH CLASS:

- 324, Electricity: Measuring and Testing, subclass 522 for measuring resistance, per se.

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- 338, Electrical Resistors, subclass 21 for a resistor responsive to surge voltage conditions.

**91.3 Including time delay:**

Subject matter under subclass 91.1 wherein the overvoltage condition is detected and/or the fault is removed after a predetermined time period utilizing time delay circuitry.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 28+, for abnormal voltage conditions in motor circuits wherein the protective circuit responds to a fault condition after a predetermined time period.
- 195, for relay or solenoids safety or protection device including time delay.

SEE OR SEARCH CLASS:

- 327, Miscellaneous Active Electrical Nonlinear Device, Circuits, and Systems, subclass 392 for circuitry having a fixed or single time delay controlled switch.
- 335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclass 28, for electromagnetically actuated switches with combined timing or delay means.
- 337, Electricity: Electrothermally or Thermally Actuated Switches, subclass 81 and subclass 88 for retarded or delayed action thermally actuated switch.
- 340, Communications: Electrical, subclass 527 for humanly perceptible means responsive to time delay.

**91.4 Including photo-coupling (e.g., photo-receptors, photo-emitters, etc):**

Subject matter under subclass 91.1 including a means responsive to light to produce an electrical signal (i.e., photocouple) and wherein the photocoupler is utilized in the detection and/or removal of the overvoltage condition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 173, for abnormal voltage conditions in relay circuits wherein a light responsive element is utilized in offering protection

SEE OR SEARCH CLASS:

- 324, Electricity: Measuring and Testing, subclasses 420, 556 for sensing voltage conditions involving photo-coupling, per se.

**91.5 Including P-N junction (e.g., a diode, a zener diode, or transistor):**

Subject matter under subclass 91.1 comprising a P-N junction device and wherein the device is utilized in the detection and/or fault removal of the overvoltage condition (e.g., P-N threshold breakdown or transistor clamping).

- (1) Note. P-N junction circuitry protection as found predominantly within the circuitry with less emphasis on substrate configurations are classified here, however, details drawn to substrate technology should be classified in Class 257.

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374, Thermal Measuring and Testing, appropriate subclass for measuring and testing thermal quantities.

**93.9 Current limiting:**

Subject matter under subclass 93.1 wherein the protective device includes a means for reducing the flow of the sensed overcurrent without interrupting the flow of current in the electrical system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

58, for impedance insertion in series with the protected system so as to limit the current thereto.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclass 276 for limiting current to a load within a regulator system.

**FOREIGN ART COLLECTIONS**

The definitions of the Foreign Patent/NPL Art Collections below correspond to the definitions of the abolished subclasses from which these Collections were formed. See the Foreign Patent/NPL Art Collection schedule for specific correspondences.

**FOR 100 Overvoltage:**

Foreign art collections including subject matter wherein the fault sensor is responsive to an overvoltage condition.

**FOR 101 With specific current responsive fault sensor:**

Foreign art collections including subject matter wherein the fault sensor responds to an abnormal current condition in the load circuit and subsequently activates a protective device.

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D. CHANGES TO THE DEFINITIONS (Project No. E-4935)

Class 363 - ELECTRICAL POWER CONVERSION SYSTEMS

Definitions Modified

Class Definition: Under SECTION IV, REFERENCES TO OTHER CLASS, SEE OR SEARCH CLASS, in the second reference to Class 361

Delete:

93+

Insert:

93.1+

Subclass 50: Under SEE OR SEARCH CLASS, in the reference to Class 361, before "."

Insert:

subclasses 91.1+ for overvoltage protection, and 93.1+ for abnormal current protection

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D. CHANGES TO THE DEFINITIONS (Project No. E-4935)

CLASS 364 - ELECTRICAL COMPUTERS AND DATA PROCESSING SYSTEMS

Definitions Modified

Subclass 184: Under SEE OR SEARCH CLASS in the reference to Class 361, after  
"protection of devices"

Insert:

, and subclass 93.2 for abnormal current protection including digital control

TRANSLATION LIST

E.2-1

ALL FINAL NOS. ARE IN CLASS ?

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NUMERICALLY LISTED WORKING NO. TO FINAL NO.

WK. NO.      FN. NO.

4000N	91.1
4005R	91.2
4015D	91.3
4020D	91.4
4025W	91.5
4010R	91.6
4030W	91.7
4035Y	91.8
4095Y	93.1
4070E	93.2
4040Y	93.3
4060C	93.4
4090N	93.5
4050T	93.6
4045T	93.7
4065E	93.8
4055C	93.9